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  - asplenoides, (L.), Nees and Mont.
  - interrupta, Nees.
  - Ludoviciana, Sulliv.
  - porelloides, Lindb.
  - spinulosa, (Dicks.), Nees and Mont.
  - undata, Sulliv.
- PLEURANTHE, Tayl.
  - olivacea, Tayl.
- PRESSIA, Nees.
  - commutata, (Lindb.), Nees.
- RADULA, Nees.
  - Caloosiensis, Aust.
  - complanata, (L.), Dumort.
  - Hallii, Aust.
  - obconica, Sulliv.
  - pallens, (Swz.), Nees.
  - spicata, Aust.
  - Sullivanti, Aust.
  - Xalapensis, Mont.
- RICCIA, Mich.
  - albida, Sulliv.
  - arvensis, Aust.
    - var. hirta, Aust.
  - Beyrichiana, Hampe.
  - bifurca, Hoffm.
  - Californica, Aust.
  - crystallina, L.
  - Donnellii, Aust.
  - fluitans, L.
    - var. terrestris.
    - var. lata.
    - var. canaliculatus, Hoffm.
  - Frostii, Aust.
  - glauca, L.
  - lamellosa, Raddi.
  - Lescuriana, Aust.
  - lutescens, Schwein.
  - natans, L.
    - var. terrestris, Aust.
  - nigrella, DeCand.
  - sorocarpa, Bisch.
  - Sullivanti, Aust.
  - tenuis, Aust.
  - tumida, Lindb.
  - Watsoni, Aust.
- SARCOSCYPHUS, Corda.
  - adustus, Nees.
  - Bolanderi, Aust.
  - emarginatus, (Ehrh.).
    - var. aquaticus, G. L. N.
  - sphacelatus, (Gies.), Nees.
- SAUTERIA,
  - limbata, Aust.
- SCAPANIA, Lindb.
  - albicans, (L.), Mitt. var. taxifolia.
  - Bolanderi, Aust.
  - breviflora, Tayl.
  - compacta, (Roth.), var. irrigua.
  - exsecta, (Schmidt).
  - nemorosa, (L.), Nees.
  - Oakesii, Aust.
  - Peckii, Aust.
  - subalpina, (Nees.).
  - uliginosa.
  - umbrosa, (Schrad.) Nees.
  - undulata, (L.) Nees and Mont.
- SENDTNERA, Endl.
  - juniperina, Nees.
- SPHÆROCARPUS, Mich.
  - Berteri, Mont.
  - Californicus, Aust.
  - Donnellii, Aust.
  - Michelii, Bellardi.
  - Texanus, Aust.
- SPHAGNŒCETIS, Nees.
  - Macouni, Aust.
- STEETZIA, Lehm.
  - Lyelli, (Hook.) Lehm.
- TARGONIA,
  - Michelii, Corda.
- THALLOCARPUS, Lindb.
  - Curtissi, Aust.
- TRICHOCOLEA, Nees.
  - Tomentella, Nees.

Genera, 49; species, 219; varieties, 17.

The Mistletoe.—The Mistletoe of the Eastern States has a general resemblance to that of Europe, *Viscum album;* but the old genus *Viscum* has been divided by modern botanists, although the lines of distinction are somewhat artificial. We have two genera, *Phoradendron* and *Arceuthobium*. Among the leading distinctions may be mentioned that the European branch of the family, *Viscum*, as now restricted, has the anther open by three pores or slits, our *Phoradendron* by two, while the *Arceuthobium* has but one. There are other slight differences in pollen grains, cotyledons, and form of the fruits. The European Mistletoe is usally found on deciduous trees only, an instance being recorded where it has been found on the Scotch pine in Germany, and its American representative, *Phoradendron* *flavescens*, Nuttall, seems also confined to deciduous trees and shrubs. This extends across the continent, a form being found on the Pacific coast still confined to deciduous plants; while another genus. *Arceuthobium*, seems wholly confined to the coniferous trees which are mixed with the deciduous ones. The name *Arceuthobium* is suggestive of this fact, it being derived from two Greek words signifying "living on the juniper." *Phoradendron*, on the other hand, means simply "living on, or stealing from trees." *Arceuthobium*, however, does not live wholly on junipers. In the herbarium of the Phila. Academy is a specimen of *A. occidentale*, growing on *Juniperus occidentalis*—some Nevada specimens are on *Pinus ponderosi*. I have specimens of *Phoradendron juniperinum* from Nevada growing on *Libocedrus decurrens*, which, by the way, is, I believe, the first time this pretty cupressineous tree has been reported from the State of Nevada. Among the differences noted by Engelmann in the Botany of California, between *Phoradendron* and *Arceuthobium*, is that while the former flowers in February and March, and matures its fruit "next winter," the fruit of the Californian species opens in the summer, and does not mature till the "second autumn." The European Mistletoe is stated by Bentham to open in spring, and perhaps this is so; it was formerly supposed to be the case with the American *Phoradendron flavescens*, but Mr. Wm. Canby had shown to the Phila. Academy recently, that in Delaware the flowers open in the fall, and the fruit matures in the autumn of the following year, or just one year afterward. The flowers and fruit are on the trees at the same time together. If this is general with *Phoradendron*. it still lessens the distinctions between the genera. Usually *Phoradendron* bears leaves, while *Arceuthobium* is leafless—but the *Libocedrus* parasite is as destitute of leaves as an *Arceuthobium*, and the common observer would see little in their general aspects to distinguish them. But there is one great difference in the genus, at least as represented by these two species. In opening the box which contained the specimens, the whole mass was covered with a dense viscid secretion, which rendered it very difficult to separate one branch from another. On leaving the lid open a little while, the watery particles soon evaporated, leaving a dry gummy deposit over the whole surface. While this was going on, the seeds were ejected with great force from their endocarps. being projected against the face with such force as to leave a stinging sensation. Dr. Engelmann has noted this power of ejection in the berries of this plant. The *Phoradendron* exhibits no trace of any such power, though there seems to be little difference in the structure of the berries. These facts raise a nice teleological question. Birds do not seem to use the berries. As they are so viscid that the famous bird-lime is made from some species, it is probable the very viscidity would prevent the free use of the beak in any attempt to use the seeds. But it is believed that by becoming attached to the feet or feathers of birds, the seeds are widely distributed, and that in this way the plant has all the advantage necessary for distribution in the "struggle for life." But *Arceuthobium*, besides all the advantages to be derived from this mode of distribution, has an additional aid from a projecting force.

Did *Arceuthobium* at one time exist when or where there were no birds, and had it to depend on this projection alone for its distributing power, and is the viscidity a later development? Did *Phoradendron* once possess the power, and has it abandoned it from having through the ages found out that it travels well enough without its exercise? Or is it rather, as I am inclined to believe, that nature loves to aim expressly at variety. and is continually exhibiting her power to accomplish the same end by a wonderful variety of means? But whatever may be thought of the various theories of development, and the laws of final causes which may have operated to produce changes, there can be but little doubt but parasitism is an acquired habit, and the endeavor to find out what these plants were, and how they behaved before they were parasites, is fast becoming one of the most interesting of biological studies.

The seeds ejected from the endocarp in *Arceuthobium* fasten themselves to the branches of trees by a glutinous mass at one end. This end is opposite to the radicle, which, in germinating, has to push out from above, and curve downward towards the branch in order to attach itself. I have not seen them during the process of germination, but as the testaceous covering is held fast by the glutinous secretion, it is probable the cotyledons are drawn out as the plumule takes its upright position, leaving the testa as an empty case fastened to the branch. Presuming that this must be the case with other Loranthaceous plants, it is difficult to understand the process by which the East Indian species performs the locomotive feat recently noted by Dr. Watt, and which from its remarkable nature has had a wide publication. It was reported as the observation of Dr. Watt that a seed falling on and becoming attached to the coriaceous leaf of a *Memecylon*, would send out its radicle, which, curving down, formed a flattened disk by which it attached itself to the leaf. But, as if it knew that a leaf could not permanently support a perennial plant, the cotyledons were lifted and turned to the other side, when the end with the disk moved to another place, and in this way the seed traveled to a more favorable spot. Without reflecting on the observation, I believe it should be repeated in order to be sure of no mistake. In all plants in our country which fasten to an object through a disk at the end of a rootlet or tendril, as in *Ampelopsis* and *Bignonia capreolata*, the attachment is made while the disk is forming. A disk once formed, does not reattach itself to an object when removed from the original spot. In like manner the cotyledons, once removed from the endo carps, would have no viscidity with which to form a resisting power while the disk was unfastening itself from its undesirable location. There is, however, so much of singular behavior in the Mistletoe family that further observations are very desirable.—THOS. MEEHAN, *Proc. Phil. Acad.*